
A trip to the White Mountains of New England

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During the latter part of August, 1927, I was privileged to make a short botanizing tour to the New England States, including a trip through the White Mountains of Vermont and New Hampshire.

Starting our trip in the Carolinian life-zone of New Jersey we soon entered the Alleghanian, and the transition was most surprisingly noticeable. Among the most interesting plants observed along the way were the purple loosestrife (*Lythrum salicaria*) or "willow-weed" of Tennyson's "The Brook"—a plant whose exquisite beauty I never appreciated until I saw it in great purple colonies in New York marshes and meadows, and the birdfoot trefoil (*Lotus corniculatus*) which was often extremely abundant along the roadsides and showed the usual variation in the color of the corollas. The tall coneflower (*Rudbeckia laciniata*) was abundant and later on, in northern New York, we were charmed by the sudden appearance of *Juniperus sibirica*. This beautiful little evergreen grows in a most characteristic manner—forming a large closed circle with the rooting ends of the stems inward and the branches all growing outward, leaving what is often an open center several feet in diameter. The leaves are white above and green beneath, causing these colonies to be quite conspicuous features of the landscape. In connection with these dwarf junipers we found that we were also in one of the territories of the American larch (*Larix laricina*), which was easily distinguished from the many other species of evergreens by its very irregular growth, crooked branches, and short clustered needles.

After exploring the wonders of Ausable Chasm and taking in the sights of the large Silver Fox Farm there, we crossed the shimmering expanse of Lake Champlain and soon found ourselves in the heart of the majestic, never-to-be-forgotten White Mountains, which cover practically the entire States of Vermont and New Hampshire. The scenery here was the most won-

derful which I have yet seen—graceful, symmetrical, mountains towering up on all sides. Viewed from one of those summits, seemingly illimitable forests stretch in all directions as far as the eye can reach. The trees which were the most conspicuous because of their abundance in these vast woods were the gray birch (*Betula populifolia*), the sweet birch (*B. lenta*), the blue birch (*B. coerulea*), and, above all, the paper birch (*B. papyrifera*). Looking off to the west we could discern the towering heights of the Presidential Range, culminating in the majestic Mt. Washington.

Sunday, August 28, was destined to be the red-letter day of our trip. After an early breakfast in Crawford Notch, my father, who has climbed many of the highest and most famous mountains of the Old World, and I, decided to climb Mt. Washington, the highest mountain peak in northeastern North America. We were informed that the distance from Crawford House, where we started, to the Tiptop House on the summit of the mountain was $8\frac{1}{2}$ miles. Perhaps it was, but, if so, those were the longest and most difficult $8\frac{1}{2}$ miles that either of us had traveled for many a day! The trip took us $7\frac{1}{2}$ hours and in a number of spots my father said the climb reminded him of the ascent of some of the Swiss Alps which he climbed in his younger days. We followed the so-called Crawford Bridle Path which led us over Mt. Clinton, Mt. Pleasant, Mt. Franklin, and Mt. Monroe before we arrived at Mt. Washington proper—like gigantic stepping stones leading up to the monster ahead!

The trail started out through a dense woods—cool, damp, and reeking with all the rain of that summer. It was narrow and slippery, but well-defined. In these woods the following trees and shrubs were noted as most abundant: *Betula papyrifera*, *B. populifolia*, *Viburnum alnifolium*, *Acer spicatum*, and *A. rubrum*. In the moist black woodland soil beneath I found veritable beds of white woodsorrel (*Oxalis Acetosella*) and mountain clubmoss (*Lycopodium annotinum* var. *pungens*). Along the sides of the trail were loads of *Aster acuminatus*, *Carex Asa-Grayi*, *Galeopsis Tetrahit*, *Nabalus altissimus*, and *Solidago squarrosa*. The latter grew in such profusion in some places as to make the dark woods fairly agleam with its golden splendor.

Coming in due course of time to a fork in the trail, we determined to keep to the right, and in so doing soon found ourselves

in a little hollow along the side of Mt. Clinton. Here we found a delightful little spring known as the Mizpah Spring, surrounded by an extensive bog filled with large and showy fern-mosses and knights-plume moss, and interspersed with straggling but abundant specimens of *Ribes glandulosum*, which differs pronouncedly from ordinary wild currants in that it is practically a trailing or, at least, a procumbent shrub. At the spring (altitude 3800 ft.) we found the first of the series of Appalachian Mountain Club's huts. A few feet away I was delighted to find several beautiful specimens of the tall white bog-orchis (*Limnorchis dilatata*).

After leaving the spring we ascended an almost perpendicular slope for 475 feet, to the very topmost point of Mt. Clinton (altitude 4275 ft.). At the beginning of this, our steepest ascent, we found ourselves still in primarily deciduous woods, but in a very short time passed on into the zone of *Abies balsamea*, *Picea rubens*, and *Picea mariana*. The balsam fir with its delicious aromatic tang was particularly welcome, and its characteristically arranged cones (which were in erect clusters at the tips of the branches) of conspicuous pinkish-red were extremely interesting.

As we went on up and up and *up* these evergreens became lower and lower in stature and always more straggling, while the common birches, viburnums, and maples of the base disappeared altogether. After we had ascended about 300 feet we found ourselves in the clouds which surrounded us as a dense, white, penetrating mist, which rendered the climbing exceedingly difficult and our clothes exceedingly wet. During this climb we passed out of the Alleghanian life-zone and entered the Canadian. As we neared the top of Clinton we advanced above the level of the clouds and were again in bright sunshine.

The top of Mt. Clinton was a veritable paradise for the botanist. We were far above the timber line now and the wind blew with unceasing violence, sweeping over the top of Clinton and almost lifting us off our feet. It is little wonder that timber or any variety of tall plant growth is unable to exist there. Still, the entire top was covered by a matting of lichens and mosses, the tallest and densest growth of this kind that I have ever seen. In walking, one's feet sank into this carpet of vegetation as into some magnificent Persian carpet.

Not only did these cryptogamic forms of plant life flourish here, but also a number of species of phanerogamic plants as well. The top of Mt. Clinton, in the Canadian life-zone, furnished me with more new specimens of flowering plants for my herbarium than any other one spot on the ascent of Mt. Washington. Growing in the midst of the lichens and mosses we found beds of the great bilberry (*Vaccinium uliginosum*), and these, happily, were loaded down with delicious fruit upon which we feasted. Along with them there were hundreds of little bushes, only about 6 or 7 inches tall, in full bloom—each with 3 or 4 pretty red gamopetalous flowers. These proved to be the mountain rose-bay (*Rhododendron lapponicum*). Compared with the *R. maximum* as seen, for instance, in the damp valleys of the Pocono Mountains in northern Pennsylvania where it sometimes attains a height of 40 feet, this little alpine cousin, in full bloom when only from 2 to 7 inches tall, furnished an instructive lesson in the effect of environmental conditions on plants of the same genus!

Scattered along the trail and amongst the bilberries we found also groups of labrador tea (*Ledum groenlandicum*)—said to be the phanerogamous plant which approaches closest to the North Pole. Close by were scores of cloudberries (*Rubus Chamaemorus*), named thus because of being the only member of the genus to regularly grow above the level of the clouds. It is not a vine or trailer as are most of its low-lying relatives, but rather a little shrub, 3 to 10 inches tall, with only 1 or 2 leaves and a single terminal flower.

A few feet farther on, where the trail was a little wider and the ground drier and more exposed, were found nine more species of rare alpine plants. First was discovered the mountain Azalea (*Chamaecistus procumbens*); then two alpine rushes (*Juncus filiformis* and *J. trifidus*); then the three-seeded sedge (*Carex trisperma*) and the tufted club-rush (*Scirpus caespitosus*). Soon thereafter were found hundreds of little colonies of *Diapensia lapponica*, which grew in more or less circular clumps so dense and tightly appressed to the ground (in order to resist the dreadful wintry blasts which seek to tear everything off the more exposed portions of the mountain) that it required considerable effort to even penetrate these solid mats with a knife in order to procure specimens!

All through the region from Clinton to the top of Washington we found hundreds of thousands of clumps of mountain sandwort (*Arenaria groenlandica*)—whose pretty little clusters of white flowers, in solid mats no more than 4 inches tall, were crowded, it seemed, into almost every nook and cranny between the boulders, and gave a delightfully unexpected local color to the landscape. Here and there were to be found specimens of the black crowberry (*Empetrum nigrum*) in fruit, and in several places large beds of three-toothed cinquefoil (*Sibbaldiopsis tridentata*) in full bloom.

Reluctantly leaving Mt. Clinton after a brief period of rest, during which time I pressed in my portable portfolio all the specimens which had been collected thus far, we descended a short way, getting back into the upper limits of the timber zone, and then started up the slope of Mt. Pleasant, which is 500 feet higher than Clinton. Just before leaving the final reaches of the timber zone we went through a little hollow in whose center lay a small sphagnum bog. Here we discovered the rare northern bog orchis (*Lysiella obtusata*) and feasted our eyes upon hundred of specimens of that most delicate and lovely of all flowers—*Linnaea americana*.

Mt. Franklin is 145 feet higher than Pleasant and the trail up its summit was now beginning to become rough and rugged. Amongst the massive boulders which were found here in great profusion grew an infinite number of scrub birches (*Betula glandulosa*) and mountain alders (*Alnus alnobetula*). Not wishing to make the unnecessary trip over the very summit of Franklin, we skirted it on a narrow, and exceedingly slippery path, where one misstep might have hurled us over the edge. Nevertheless, even in such a position we were still able to observe and collect some specimens of *Calamagrostis canadensis* and *Houstonia caerulea*.

The transition from Mt. Franklin to Mt. Monroe was marked by a long straight ridge or saddle, not more than ten feet wide; and by leaving the trail for a few feet in either direction one was able to look down upon the verdant forest almost 4000 feet below. Our outlook at this point extended almost 50 miles in either direction, in which immense area we were able to discern only two human habitations, although others, of course, were hidden by the forest. We saw regions where the rain was

falling and others where the sun was shining brightly. In fact, being up so high, we were able to follow the course of a rain-storm far in the distance, noting how it advanced, and how on either side the sun was shining.

Mt. Monroe is 670 feet higher than Mt. Franklin—its altitude being 5590 feet—and coming down from its summit we were surprised and delighted to see ahead of us, in the hollow between Monroe and Washington, at an altitude of over 5000 feet, about a dozen small lakes. These are appropriately known as the Lakes of the Clouds. Along the margin of one of these lakes we discovered another very rare species—perhaps the rarest of the entire trip—a plant found only on the summits of the Presidential Range and on Mt. Kineo, Me. This was the yellow mountain avens (*Sieversia Peckii*), and in full bloom!—truly a sight to make the heart of a tired and very footsore botanist rejoice!

Leaving the charming Lakes of the Clouds and the welcome Appalachian Mountain Club shelter there, we saw ahead of us the towering height of Mt. Washington, whose summit was still 1290 feet above us. Looking at it from below it appeared to be one mass of gigantic boulders piled in hopeless confusion upon one another. There was not a tree or shrub or bush in the whole expanse of our view, and the path was but faintly discernible over and among the boulders! A botanical portfolio filled with large botanical driers, when soaked with moisture, has a way of becoming unbelievably heavy and burdensome—but our several hundred plant collections had to be carried along in spite of the inconvenience. Attempting to travel up this last and steepest ascent, juggling a water-soaked portfolio in one hand and a pair of binoculars in the other—over gigantic boulders covered in many places with wet *Umbilicaria* lichens—was a task not without its humorous incidents which, however, were not fully appreciated at the time!

During this final ascent of 1290 feet up Washington's slope we observed only six species of plants—three of which we had passed already on the slopes of preceding peaks, the *Umbilicaria* lichen, the mountain sandwort, and the scrub birch; and three which were seen here for the first time. These latter we found when about half-way up Mt. Washington where we came upon a broad expanse of meadow land lying most surprisingly among

the rocks and boulders which had completely hidden it from our view below. This alpine meadow covered about 5 or more acres and bears the name of "Bigelow's Lawns". In these "lawns" we found growing the rare alpine sedge known as Bigelow's sedge (*Carex concolor*), in fact the meadow was made up almost exclusively of this sedge. Scattered here and there among the sedges we found a number of specimens of low rattlesnake-root (*Nabalus nanus*) and Cutler's alpine goldenrod (*Solidago Cutleri*), neither of which attained a height of more than 3 or 4 inches and were yet perfectly normal and matured plants in full anthesis!

From Bigelow's Lawns to the summit of Washington was the most difficult section of our ascent. We eventually arrived at the very summit of Mt. Washington (altitude 6293 feet) in a state that was pretty close to exhaustion. We reached the Summit House (or "Tiptop House", as it used to be called) at 5:15 P.M., and certainly were thankful to find a dry room and supper and bed awaiting us.

The next morning was spent roaming about on the top of Mt. Washington, enjoying the wonderful view. One could see points in five States and Canada, and could gaze east to the Atlantic Ocean, west to Lake Champlain and the Adirondacks, south to Lake Winnepesaukee, and north to the misty outlines of Lake Memphremagog.

About 10 A.M. the cog railroad train puffed up to the summit, discharging a crowd of passengers who had come from many parts of the United States and Canada to see this sight, but who chose the easy and comfortable method of ascent. Several thousand tourists are brought up by this train every season.

Our return trip was by train, $2\frac{1}{2}$ hours from the Summit House to the Base Station (at the very base of the mountain but still 10 miles from Crawford House).

It was particularly interesting to note as we descended how gradually we left the zone of rocks and boulders and entered the zone of low herbs and flowers; then the region of dwarfed shrubs and bushes; and on into the timber zone. The upper margin of this timber zone was marked by most wonderful examples of the tenacity of living organisms in combating the elements. The trees were stunted and bedraggled in appearance, draped from top to bottom with epiphytic lichens and mosses, with not a single bud on the northern side developed so that each tree

looked as though some giant had come with a monstrous knife and had sliced off all the branches which protruded toward the north! Eventually we descended again into the zone of forests and noted with a sigh of relief the great increase in forms of wild life. The fireweed (*Chamaenerion angustifolium*), the red-berried elder (*Sambucus racemosus*), the American mountain-ash (*Sorbus americana*), the American larch (*Larix laricina*), the tall flat-topped white aster (*Doellingeria umbellata*), and the pearly everlasting (*Anaphalis margaritacea*) were the most abundant plants observed.

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